



9.19 Borough of Madison

This section presents the jurisdictional annex for the Borough of Madison.

9.19.1 Hazard Mitigation Plan Point of Contact

The following individuals have been identified as the hazard mitigation plan's primary and alternate points of contact.

Primary Point of Contact		Alternate Point of Contact	
Name:	Police Chief Darren Dachisen	Name:	Robert Vogel - Engineer
Address:	EOC - 62 Kings Road, Madison NJ	Address:	50 KINGS RD MADISON, NJ
Phone:	973-593-3010	Phone:	973-593-3061
E-Mail:	dachisend@rosenet.org	E-Mail:	vogelr@rosenet.org

9.19.2 Municipal Profile

The Borough of Madison is a small suburban community in southeast Morris County. The Borough is bordered by five municipalities: the Boroughs of Florham Park and Chatham are located to the north and east, the Townships of Chatham, Harding and Morris to the south and west, and Morristown to the northwest. The Borough has a total area of 4.22 square miles (4.21 square miles of land and 0.01 square miles of water). Black Brook and Spring Garden Brook run through the Borough, both are tributaries of the Passaic River. According to the U.S. Census, the 2010 population for the Borough of Madison was 15,845.

Growth/Development Trends

The following table summarizes recent residential/commercial development since 2010 to present and any known or anticipated major residential/commercial development and major infrastructure development that has been identified in the next five years within the municipality. Refer to the map in Section 9.19.8 of this annex which illustrates the hazard areas along with the location of potential new development.

Table 9.19-1. Growth and Development

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Block & Lot)	Known Hazard Zone(s)	Description/Status of Development
Recent Development from 2010 to present					
Madison Public Safety Complex	Comm	15K SQ	62 Kings Hwy	NEHRP: D	New police and fire headquarters finalized in 2010
Known or Anticipated Development in the Next Five (5) Years					
GREEN VILLAGE REDEVELOPMENT	COMM	100 UNITS 3 BLDGS	B3001 L8 KINGS ROAD	NEHRP: D	SITE PLAN
GIRALDA FARMS SITE PLAN BUILDOUT	COMM	450,000 SF OFFICE	B3202 L1 MADISON AVE	NEHRP: D	SITE PLAN

* Only location-specific hazard zones or vulnerabilities identified.

9.19.3 Natural Hazard Event History Specific to the Municipality

Morris County has a history of natural and non-natural hazard events as detailed in Volume I, Section 5.0 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. For the purpose of this plan update, events that



have occurred in the County from 2008 to present were summarized to indicate the range and impact of hazard events in the community. Information regarding specific damages is included, if available, based on reference material or local sources. This information is presented in the table below. For details of these and additional events, refer to Volume I, Section 5.0 of this plan.

Table 9.19-2. Hazard Event History

Dates of Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
February 12, 2008	#1 Winter Storm	N/A	N/A	Icing and tree damages. Electrical outages. . \$15,000 response cost
March 8, 2008	#2 Flash Flood	N/A	N/A	Flooding on Main Street, Waverly, Green, Central, Kings for 1-3 hours. Basement pumpouts. Stream erosion. \$25,000 in staff overtime.
June 16, 2008	#3 Thunderstorms	N/A	N/A	Flooding on Main Street, Waverly, Green, Central, Kings for 1-3 hours. Basement pumpouts. Stream erosion. \$25,000 in staff overtime.
October 28, 2008	#4 Heavy Rain, Snow, Strong Wind	N/A	N/A	Flooding on Main Street, Waverly, Green, Central, Kings for 1-3 hours. Basement pumpouts. Stream erosion. \$25,000 in staff overtime.
February 12, 2009	#5 High Wind	N/A	N/A	Minor electrical outages. \$5,000 in staff overtime.
June 6, 2009	#6 Heavy Rain, Lightning	N/A	N/A	Flooding on Main Street, Waverly, Green, Central, Kings for 1-3 hours. Basement pumpouts. Stream erosion. \$25,000 in staff overtime.
March 12 – April 15, 2010	#8 Severe Storms and Flooding	DR-1897	Yes	Flooding on Main Street, Waverly, Green, Central, Kings for 1-3 hours. Basement pumpouts. Stream erosion. \$25,000 in staff overtime.
November 17, 2010	#9 Thunderstorms	N/A	N/A	Ponding on Main Street, Waverly, Green, Central, Kings. Storm and sanitary sewer capacity issues. \$2,000 in staff overtime.
December 26-27, 2010	#10 Severe Winter Storm and Snowstorm	DR-1954	Yes	Snow removal costs. Icing and tree damages. Electrical outages. . \$150,000 response cost
February 1, 2011	#11 Winter Storm	N/A	N/A	Snow removal costs. Icing and tree damages. Electrical outages. . \$50,000 response cost
March 7, 2011	#12 Flood	N/A	N/A	Ponding on Main Street, Waverly, Green, Central, Kings. Storm and sanitary sewer capacity issues. \$5,000 in staff overtime.
April 16, 2011	#13 Flood	N/A	N/A	Ponding on Main Street, Waverly, Green, Central, Kings. Storm and sanitary sewer capacity issues. \$5,000 in staff overtime.
August 26 – September 5, 2011	#14 Hurricane Irene	EM-3332 DR-4021	Yes Yes	Flooding on Main Street, Waverly, Green, Central, Kings for days. Electrical outages. Basement pumpouts. Erosion. \$350,000 response cost.
September 28 – October 6, 2011	#15 Remnants of Tropical Storm Lee	DR-4039	No	Flooding on Main Street, Waverly, Green, Central, Kings for 1-3 hours. Basement pumpouts. Stream erosion. \$25,000 in staff overtime.
October 29, 2011	#16 Severe Storm	DR-4048	Yes	Flooding on Main Street, Waverly, Green, Central, Kings for 1-3 hours. Basement pumpouts. Stream erosion. \$25,000 in staff overtime.
June 10, 2012	#17 Thunderstorms	N/A	N/A	Ponding on Main Street, Waverly, Green, Central, Kings. Storm and sanitary sewer capacity issues. \$5,000 in staff overtime.
July 26, 2012	#18 Thunderstorms	N/A	N/A	Ponding on Main Street, Waverly, Green, Central, Kings. Storm and sanitary sewer capacity issues. \$5,000 in staff overtime.
October 26 – November 8,	#19 Hurricane Sandy	EM-3354 DR-4086	Yes Yes	Flooding on Main Street, Waverly, Green, Central, Kings for days. Electrical outages. Basement



Table 9.19-2. Hazard Event History

Dates of Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
2012				pumpouts. Stream erosion. \$750,000 response.
June 18, 2013	#20 Flash Flood	N/A	N/A	Flooding on Main Street, Waverly, Green, Central, Kings for 1-3 hours. Basement pumpouts. Stream erosion. \$25,000 in staff overtime.
July 7, 2013	#21 Thunderstorms	N/A	N/A	Ponding on Main Street, Waverly, Green, Central, Kings. Storm and sanitary sewer capacity issues. \$5,000 in staff overtime.
April 30, 2014	#23 Flood	N/A	N/A	Ponding on Main Street, Waverly, Green, Central, Kings. Storm and sanitary sewer capacity issues. \$2,000 in staff overtime.
May 1, 2014	#24 Flood	N/A	N/A	Ponding on Main Street, Waverly, Green, Central, Kings. Storm and sanitary sewer capacity issues. \$2,000 in staff overtime.

9.19.4 Hazard Vulnerabilities and Ranking

The hazard profiles in Section 5.0 of this plan have detailed information regarding each plan participant's vulnerability to the identified hazards. The following summarizes the hazard vulnerabilities and their ranking in the Borough of Madison. For additional vulnerability information relevant to this jurisdiction, refer to Section 5.0.

Hazard Risk/Vulnerability Risk Ranking

The table below summarizes the hazard risk/vulnerability rankings of potential hazards for the Borough of Madison.

Table 9.19-3. Hazard Risk/Vulnerability Risk Ranking

Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard ^{a, c}	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking ^b
Drought	Damage estimate not available	Frequent	27	Medium
Dam Failure	Damage estimate not available	Rare	6	Low
Earthquake	500-year MRP: \$5,230,219 2,500-year MRP: \$87,773,357	Occasional	32	High
Extreme Temperature	Damage estimate not available	Frequent	27	Medium
Flood	1% Annual Chance: \$6,738	Frequent	18	Medium
Geological Hazards	Exposed to Class A and Class B: \$0	Occasional	12	Low
Severe Storm	100-Year MRP: \$3,508,561 500-year MRP: \$17,306,382 Annualized: \$226,609	Frequent	48	High
Winter Storm	1% GBS: \$40,382,187 5% GBS: \$201,910,937	Frequent	54	High
Wildfire	Estimated Value Exposed to Extreme, Very High and High: \$72,336	Rare	6	Low
Disease Outbreak	Damage estimate not available	Frequent	36	High
Hazardous	Damage estimate not available	Frequent	36	High



Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard ^{a, c}	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking ^b
Materials				
Infestation	Damage estimate not available	Frequent	18	Medium

Notes:

- a. Building damage ratio estimates based on FEMA 386-2 (August 2001)
- b. The valuation of general building stock and loss estimates was based on custom inventory for the municipality.
 High = Total hazard priority risk ranking score of 31 and above
 Medium = Total hazard priority risk ranking of 20-30+
 Low = Total hazard risk ranking below 20
- c. Loss estimates for the severe storm and severe winter storm hazards are structural values only and do not include the value of contents.
- d. Loss estimates for the flood and earthquake hazards represent both structure and contents.
- e. The HAZUS-MH earthquake model results are reported by Census Tract.

National Flood Insurance Program (NFIP) Summary

The following table summarizes the NFIP statistics for the Borough of Madison.

Table 9.19-4. NFIP Summary

Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 100-year Boundary (3)
Borough of Madison	38	3	\$3,953.48	0	0	0

Source: FEMA Region 2, 2014

- (1) Policies, claims, repetitive loss and severe repetitive loss statistics provided by FEMA Region 2, and are current as of 9/30/2014. Please note the total number of repetitive loss properties includes the severe repetitive loss properties. The number of claims represents claims closed by 9/30/14.
- (2) Total building and content losses from the claims file provided by FEMA Region 2.
- (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file.

Notes: FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility.

A zero percentage denotes less than 1/100th percentage and not zero damages or vulnerability as may be the case.

Number of policies and claims and claims total exclude properties located outside County boundary, based on provided latitude and longitude.

Critical Facilities

HAZUS-MH did not identify any critical facilities within the Borough of Madison that are exposed to the one-percent and/or 0.2-percent annual chance flood areas.

Other Vulnerabilities Identified

In the Borough of Madison, flooding along Spring Garden Brook and Black Brook have historically occurred as a result of heavy rainfall, usually associated with localized thunderstorms and hurricanes during the summer and fall. Water levels along Spring Garden Brook and Black Brook within the Borough are not affected by the water levels of the Passaic River. Few flooding problems in the Borough originate outside of the Borough. Drainage problems within Madison can be attributed to inadequate culverts and storm sewers. Storm sewer inlets along steeply sloping streets are inefficient in the Borough and stormwater runoff has a tendency to flow over the outlets. Because of this, flooding may occur in the flatter areas of the Borough due to the additional runoff. Areas subject to this kind of flooding are located near Kings Road and near the tributary to Black Brook in the Anthony Drive-North Street area (FEMA FIS 2010).



9.19.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of Mitigation Planning into Existing and Future Planning Mechanisms

Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to the Borough of Madison.

Table 9.19-5. Planning and Regulatory Tools

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Planning Capability				
Master/Comprehensive Plan	Yes	Local	Planning Bd.	March 15, 2011
Capital Improvements Plan	Yes	Local	Planning Bd.	February 18, 2015
Floodplain Management/Basin Plan	Yes	Local	Planning Bd.	Land Use Ordinance 195
Stormwater Management Plan	Yes	Local	Planning Bd.	Land Use Ordinance 195
Open Space Plan	Yes	Local	Planning Bd.	Land Use Ordinance 195
Stream Corridor Management Plan	Yes	Local	Planning Bd.	Land Use Ordinance 195
Watershed Management or Protection Plan	Yes	Local	Planning Bd.	Land Use Ordinance 195
Economic Development Plan	Yes	Local	Planning Bd.	Downtown Development Commission
Comprehensive Emergency Management Plan	Yes	Local	Police OEM	
Emergency Response Plan	Yes	Local	Police OEM	
Post-Disaster Recovery Plan	Yes	Local	Police OEM	
Transportation Plan	Yes	Local	Planning	Land Use Ordinance 195
Strategic Recovery Planning Report	N/A			
Other Plans:	N/A			
Regulatory Capability				
Building Code	Yes	State & Local	Building Dept.	State Uniform Construction Code Act (N.J.S. 52:27D-119 et seq.)
Zoning Ordinance	Yes	Local	Land Use Dpt	Land Use Ordinance 195
Subdivision Ordinance	Yes	Local	Land Use Dpt	Land Use Ordinance 195
NFIP Flood Damage Prevention Ordinance	Yes	Local	Land Use Dpt	Land Use Ordinance 195
NFIP: Cumulative Substantial Damages	Yes	Local	Land Use Dpt	Land Use Ordinance 195



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
NFIP: Freeboard	Yes	Local	Land Use Dpt	Land Use Ordinance 195
Growth Management Ordinances	Yes	Local	Land Use Dpt	Land Use Ordinance 195
Site Plan Review Requirements	Yes	Local	Land Use Dpt	Land Use Ordinance 195
Stormwater Management Ordinance	Yes	Local	Land Use Dpt	Land Use Ordinance 195
Municipal Separate Storm Sewer System (MS4)	No	State	NJ DEP	N.J.A.C. 7:14A-25.1
Natural Hazard Ordinance	No			
Post-Disaster Recovery Ordinance	No			
Real Estate Disclosure Requirement	No	State	Consumer Affairs	N.J.A.C. 13:45A-29.1
Other [Special Purpose Ordinances (i.e., sensitive areas, steep slope)]	Yes	Local	Land Use Dpt	Land Use Ordinance 195 Steep Slope

Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Borough of Madison.

Table 9.19-6. Administrative and Technical Capabilities

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Administrative Capability		
Planning Board	Yes	Land Use Dept.
Mitigation Planning Committee	No	
Environmental Board/Commission	Yes	Environmental Commission
Open Space Board/Committee	Yes	Open Space Committee
Economic Development Commission/Committee	Yes	Downtown Development Commission
Maintenance Programs to Reduce Risk	Yes	Public Works Dept.
Mutual Aid Agreements	Yes	Fire, Police, Engineer, Building
Technical/Staffing Capability		
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Yes	Consultant and staff Engineer
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Consultant and staff Engineer
Planners or engineers with an understanding of natural hazards	Yes	Consultant and staff Engineer
NFIP Floodplain Administrator	Yes	Engineer
Surveyor(s)	Yes	Consultant
Personnel skilled or trained in GIS and/or Hazus-MH applications	Yes	Consultant and staff Engineer
Scientist familiar with natural hazards	No	
Emergency Manager	Yes	Police Chief

**Table 9.19-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Grant Writer(s)	Yes	Staff
Staff with expertise or training in benefit/cost analysis	Yes	Engineer
Professionals trained in conducting damage assessments	Yes	Engineer and Bldg Official

Fiscal Capability

The table below summarizes financial resources available to the Borough of Madison.

Table 9.19-7. Fiscal Capabilities

Financial Resources	Accessible or Eligible to Use (Yes/No/Don't Know)
Community Development Block Grants (CDBG, CDBG-DR)	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for specific purposes	Yes
User fees for water, sewer, gas, or electric service	Yes
Impact Fees for homebuyers or developers of new development/homes	Yes
Stormwater Utility Fee	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	Yes
Other Federal or State Funding Programs	Yes
Open Space Acquisition Funding Programs	Yes
Other	

Community Classifications

The table below summarizes classifications for community program available to the Borough of Madison.

Table 9.19-8. Community Classifications

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No		
Building Code Effectiveness Grading Schedule (BCEGS)	No		
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	3	
Storm Ready	No		
Firewise	Yes		
Disaster/Safety Programs in/for Schools	No		
Organizations with Mitigation Focus (advocacy group, non-government)	No		
Public Education Program/Outreach (through website, social media)	Yes		
Public-Private Partnerships	No		

N/A = Not applicable. NP = Not participating. - = Unavailable. TBD = To be determined.



The classifications listed above relate to the community's ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community's capabilities in all phases of emergency management (preparedness, response, recovery, and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class 1 being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1,000 feet of a creditable fire hydrant and is within five road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO's Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

Self-Assessment of Capability

The table below provides an approximate measure of Madison's capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

Table 9.19-9. Self-Assessment Capability for the Municipality

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)*	Moderate	High
Planning and Regulatory Capability		X	
Administrative and Technical Capability		X	
Fiscal Capability		X	
Community Political Capability		X	
Community Resiliency Capability		X	
Capability to Integrate Mitigation into Municipal Processes and Activities.		X	

National Flood Insurance Program

NFIP Floodplain Administrator

Robert Vogel, PE, Engineer

Flood Vulnerability Summary

Emergency response personnel recall various call-outs for flood damaged properties. Additionally, emergency response personnel received various calls for assistance during Sandy and other events. Substantial damage estimates were made and submitted to FEMA for reimbursement claims. Currently, there are no elevation or acquisition proposals received.



Resources

The FPA is the sole person assuming the responsibilities of floodplain administration; however, contract staff is available if needed. Services and functions provided by the NFIP FPA include review/commend LOMR, perform inspection of impacted property, manage design solutions, damage assessment, GIS and website section for flood zone determination, and mitigation information. The Borough provides education sources regarding flood hazards/ risk on the municipal website. The FPA indicated that there are barriers to running an effective floodplain management program that includes staffing and coordination increases as complexity increases. The FPA states that they have a good background of experience in floodplain administration but that can always be improved with more current and up-to-date educational tools and he would consider attending continuing education and/or certification training on floodplain management if offered.

Compliance History

The FPA indicated that there are relatively few structures within or adjoining floodplains; however, the Borough may still benefit from CRS involvement. The most recent compliance audit was conducted at least 10 years ago.

Regulatory

The Borough's ordinances follow prescribed federal and state outlines. Additionally, other local ordinances, plans or programs that support floodplain management and meet NFIP requirements in the Borough include ordinances that requires acknowledgement or floodplain elevation on any new structures and also riparian buffers along streams.

Community Rating System

The Borough of Madison does not participate in the Community Rating System (CRS) program; however, the Borough has considered joining the program and would be interested in attending a CRS seminar if offered locally.

Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community's progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures.

Planning

The Borough of Madison Master Plan Reexamination (2011) continues to build upon the goals and objectives set forth from the 1992 Master Plan and subsequent reexaminations. Since the last adoption of a reexamination report in 2004, the Borough has adopted a new Open Space and Recreation Plan and Stormwater Management Plan, which have helped guide planning decisions. The goals and objectives of the Plan include promoting the preservation of natural systems and environmental sensitive areas, including wetlands, flood hazard areas and aquifer recharge areas, regulating storm drainage effectively to alleviate flooding damage, and protecting streams, waterways, wetlands and aquifer recharge areas through careful stormwater and wastewater management practices.



Regulatory and Enforcement

The Borough has multiple ordinances pertaining to the mitigation of hazards. These ordinances include the NFIP Flood Damage Prevention Ordinance, a fire prevention ordinance and hazard materials ordinance.

Operational and Administration

The Borough has established an Environmental Commission, and Open Space, Recreation, and Historic Preservation Advisory Committee, a Parks Advisory Committee and Sustainable Madison Committee that aid in planning decisions to support the conservation and preservation of the Borough's critical environmental features. Madison has implemented maintenance programs in order to reduce risk, and has fire, police, engineering and building department mutual aid agreements that allow surrounding communities to provide and receive additional support during an emergency event.

Fiscal

The Borough has a multitude of fiscal capabilities for funding mitigation actions and projects. The Borough has access to Community Development Block Grants and other state and federal funding sources. Local fiscal resources include capital improvements funding and an Open Space Trust Fund of \$0.018 per \$100 of assessed value.

9.19.6 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and prioritization.

Past Mitigation Initiative Status

The following table indicates progress on the community's mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under 'Capability Assessment' presented previously in this annex.



Table 9.19-10. Past Mitigation Initiative Status

2010 Mitigation Action	Lead	Status	Describe Status	Next Step	Describe Next Step
Madison 1: Backup power (generator) for Madison High School (shelter).	OEM	No Progress	Borough has recommended this generator project to Board of ED.	Include in 2015 HMP	Borough will reestablish communication with BOE, Create MOU ref. shelter
Madison 2: Backup power (generator) for Ambulance Corps.	OEM	Complete		Discontinue	Action completed
Madison 3: Reconstruction of Elmer Street Culvert.	DPW	In Progress	All engineering and design, cost estimates are completion. Awaiting funding approval. Easement issues	Include in 2015 HMP	Portion of culvert has already collapsed and has been emergency repaired. Awaiting easement finalization
Madison 4: Improvement of Sewage Pump Station on North Street. Storm water back-up overwhelms this pump station.	DPW	In Progress	Appropriation has been made for \$400K for improvements. New electric transformers installed.	Include in 2015 HMP	Bid under development for replacement pumps
Madison 5: Renovation of Culvert at Green Village Road.	DPW	Complete	Drainage bypass completed	Discontinue	Action completed
Madison 6: Stream Channel Stabilization at Johns Street.	DPW	No Progress	Design plans are complete. DEP permit issues (individual permit)	Include in 2015 HMP	Obtain permit from DEP
Madison 7: Stream Channel Stabilization at Library Swale	DPW	No Progress	DEP permit required. Low priority for Borough	Include in 2015 HMP	Revise this project to a "Trash Rack" at Library Set up bar grades. Design and construction needed
Madison 8: Develop all-hazards public education and outreach program for hazard mitigation and preparedness	Local and County OEM	In Progress	Limited progress Stakeholders outreach contacted through LEPC	Include in 2015 HMP	Set up meeting with OEM, Engineer, Flood Plain Administrator, BOE, LEPC Hazard Mitigation Sub-committee. Update and put mitigation info on webpage



Proposed Hazard Mitigation Initiatives for the Plan Update

The Borough of Madison participated in a mitigation action workshop in January 2015 and was provided the following FEMA publications to use as a resource as part of their comprehensive review of all possible activities and mitigation measures to address their hazards: FEMA 551 ‘Selecting Appropriate Mitigation Measures for Floodprone Structures’ (March 2007) and FEMA ‘Mitigation Ideas – A Resource for Reducing Risk to Natural Hazards’ (January 2013).

Table 9.19-11 summarizes the comprehensive-range of specific mitigation initiatives the Borough of Madison would like to pursue in the future to reduce the effects of hazards. Some of these initiatives may be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6, fourteen evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.19-12 provides a summary of the prioritization of all proposed mitigation initiatives for the Plan update.



Table 9.19-11. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals and Objectives Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
MAD-1 (old Madison 1)	Backup power (generator) for Madison High School (shelter).	Existing	All	G-3	OEM	High	High	HMGP	Short Term DOF	High	SIP	SP
MAD-2 (old Madison 3)	Reconstruction of Elmer Street Culvert.	N/A	Flood	G-3, G-4	DPW	High	High	HMA Grants, NJDEP	Short Term DOF	High	SIP	SP
MAD-3 (old Madison 4)	Improvement of Sewage Pump Station on North Street. Storm water back-up overwhelms this pump station.	Existing	Flood	G3- G-4	DPW	High	High	Municipal appropriations	On-going	High	SIP	SP
MAD-4 (old Madison 6)	Stream Channel Stabilization at Johns Street.	N/A	Flood	G-3, G-4	DPW	High	High	Municipal appropriations	On-going	High	SIP	SP
MAD-5 (old Madison-7)	Install Trash Rack at Library Swale, set up bar grades	Existing	Flood	G-3, G-4	DPW	High	Medium	Municipal appropriations	Short Term DOF	Low	SIP	SP
MAD-6 (old Madison-8)	Develop all-hazards public education and outreach program for hazard mitigation and preparedness	N/A	All	G-1	Local and County OEM	High	Low	Municipal Budget	Short Term DOF	Medium	EAP	PE
MAD-7	Culvert Replacement, Stream bed and bank re-stabilization - Belleau Woods Culvert	Existing	Flood	G-3, G-4	Engineer, OEM	High	High	HMA Grants, Municipal Budget matching share	Short Term DOF	High	NSP	NSP
MAD-8	Develop and implement an enhanced all-hazards, public outreach / education / mitigation information program on natural hazard risks and what citizens can do in the way of mitigation and preparedness, including flood insurance. This program will include: <ul style="list-style-type: none"> • Providing general natural hazard risk, preparedness and mitigation, and related NFIP information in regular newsletter and mailings. • Including natural hazard risk and risk reduction information through social media channels and email blast systems. • Posting of flyers and other readily available NFIP informational materials at City Hall or distributing at regular civic meetings. • Preparation, distribution and analysis of public surveys. • Developing/maintaining a natural hazard risk management webpage on the municipal website where information and mapping can be posted. • Enhance public outreach to residents in NFIP floodplain areas to inform of annual grant opportunities, etc. which may include periodic articles and handouts. 											
	See Above	N/A	All	G-1	OEM	High	Low	Municipal Budget	Short Term	Medium	EAP	PE

Notes:





Not all acronyms and abbreviations defined below are included in the table.

*Does this mitigation initiative reduce the effects of hazards on new and/or existing buildings and/or infrastructure? Not applicable (N/A) is inserted if this does not apply.

Acronyms and Abbreviations:

CAV	Community Assistance Visit
CRS	Community Rating System
DPW	Department of Public Works
FEMA	Federal Emergency Management Agency
FPA	Floodplain Administrator
HMA	Hazard Mitigation Assistance
N/A	Not applicable
NFIP	National Flood Insurance Program
NJDEP	New Jersey Department of Environmental Protection
NJOEM	New Jersey Office of Emergency Management
OEM	Office of Emergency Management

Potential FEMA HMA Funding Sources:

FMA	Flood Mitigation Assistance Grant Program
HMGP	Hazard Mitigation Grant Program
PDM	Pre-Disaster Mitigation Grant Program
RFC	Repetitive Flood Claims Grant Program (discontinued 2015)
SRL	Severe Repetitive Loss Grant Program (discontinued 2015)

Timeline:

Short	1 to 5 years
Long Term	5 years or greater
OG	On-going program
DOF	Depending on funding

Costs:

Where actual project costs have been reasonably estimated:

Low	< \$10,000
Medium	\$10,000 to \$100,000
High	> \$100,000

Where actual project costs cannot reasonably be established at this time:

Low	Possible to fund under existing budget. Project is part of, or can be part of an existing on-going program.
Medium	Could budget for under existing work plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
High	Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.

Benefits:

Where possible, an estimate of project benefits (per FEMA's benefit calculation methodology) has been evaluated against the project costs, and is presented as:

Low=	< \$10,000
Medium	\$10,000 to \$100,000
High	> \$100,000

Where numerical project benefits cannot reasonably be established at this time:

Low	Long-term benefits of the project are difficult to quantify in the short term.
Medium	Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.
High	Project will have an immediate impact on the reduction of risk exposure to life and property.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP)- These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities

CRS Category:





- *Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.*
- *Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.*
- *Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.*
- *Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.*
- *Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.*
- *Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities*



Table 9.19-12. Summary of Prioritization of Actions

Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
MAD-1 (old Madison 1)	Backup power (generator) for Madison High School (shelter).	1	1	1	1	1	1	1	0	1	1	1	1	1	1	13	High
MAD-2 (old Madison 3)	Reconstruction of Elmer Street Culvert.	0	1	1	1	1	1	1	1	1	1	1	0	1	1	12	High
MAD-3 (old Madison 4)	Improvement of Sewage Pump Station on North Street. Storm water back-up overwhelms this pump station.	0	1	1	1	1	1	1	1	1	1	1	0	1	1	12	High
MAD-4 (old Madison 6)	Stream Channel Stabilization at Johns Street.	0	1	1	1	1	1	1	1	1	1	1	0	1	1	12	High
MAD-5 (old Madison-7)	Install Trash Rack at Library Swale, set up bar grades	0	1	0	1	0	1	0	1	0	1	0	0	1	0	6	Low
MAD-6 (old Madison-8)	Develop all-hazards public education and outreach program for hazard mitigation and preparedness	1	0	1	0	1	1	0	0	1	1	1	0	1	1	9	Medium
MAD-7	Culvert Replacement, Stream bed and bank re-stabilization - Belleau Woods Culvert	0	1	1	1	1	1	1	1	1	1	1	0	1	1	12	High
MAD-8	Develop and implement an enhanced all-hazards, public outreach / education / mitigation information program	1	0	1	0	1	1	0	0	1	1	1	0	1	1	9	Medium

Note: Refer to Section 6 which contains the guidance on conducting the prioritization of mitigation actions.



9.19.7 Future Needs To Better Understand Risk/Vulnerability

None at this time.

9.19.8 Hazard Area Extent and Location

Hazard area extent and location maps have been generated for the Borough of Madison that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan, and are considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the Borough of Madison has significant exposure. These maps are illustrated in the hazard profiles within Section 5.4, Volume I of this Plan.

9.19.9 Additional Comments

None at this time.



Figure 9.19-1. Borough of Madison Hazard Area Extent and Location Map 1

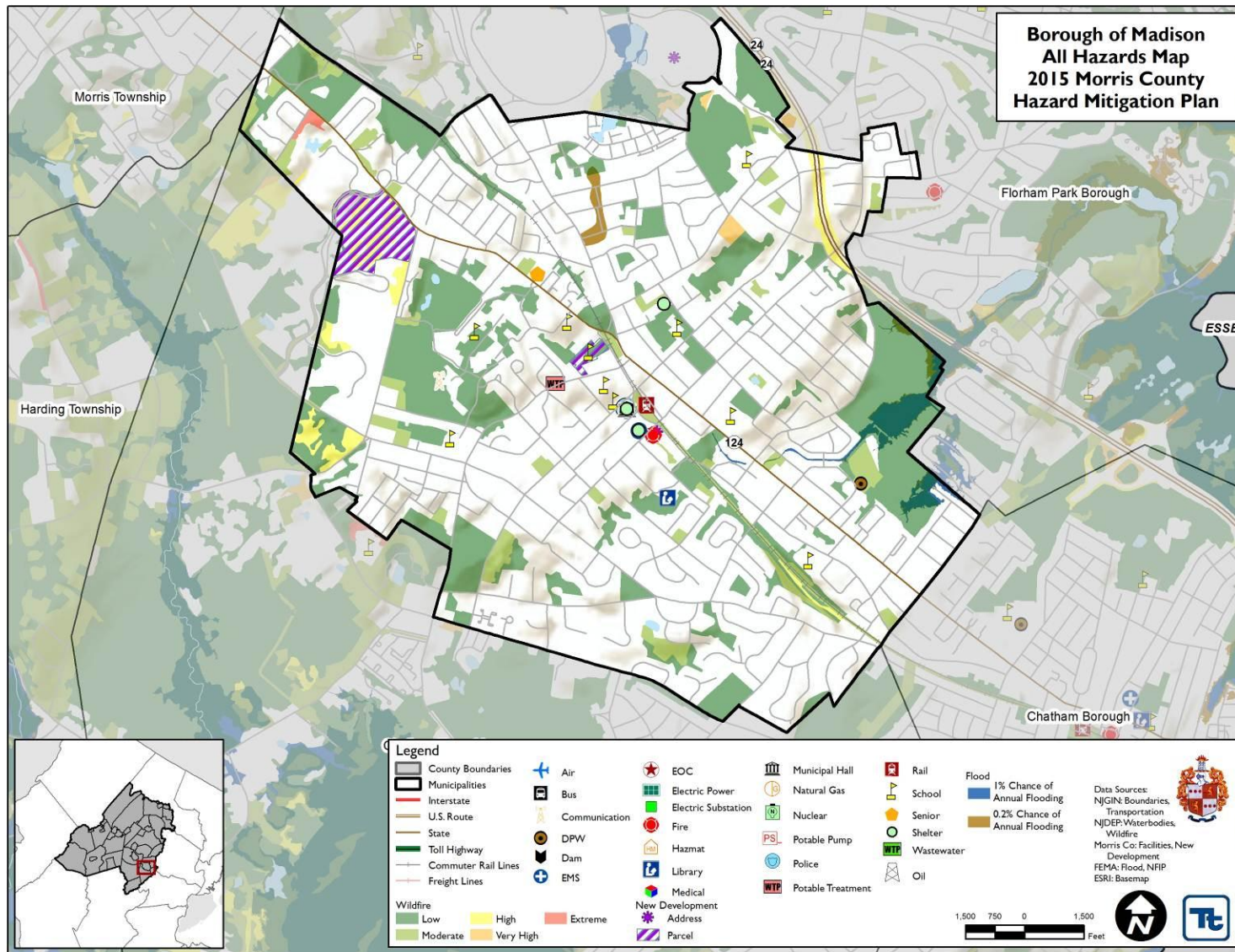
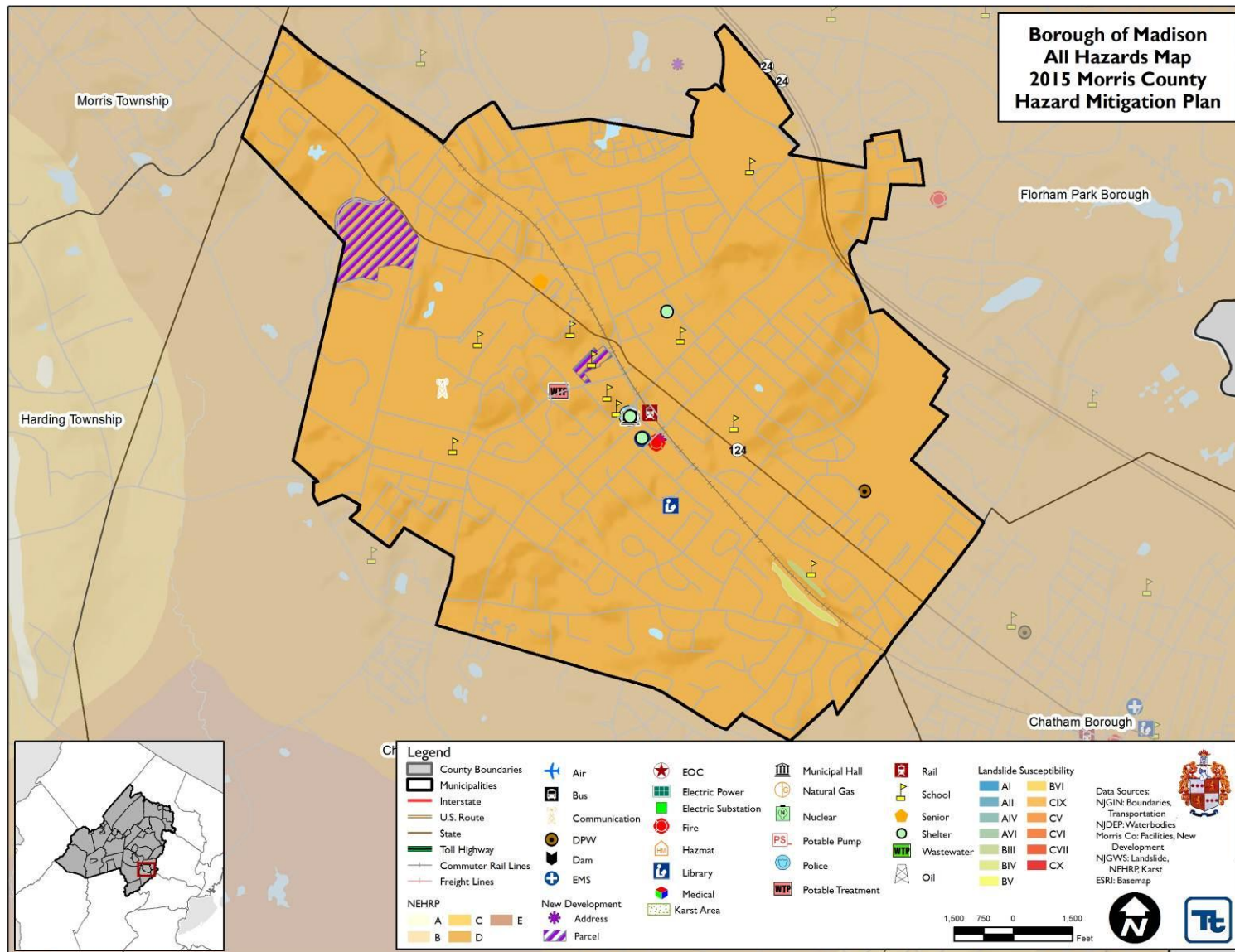




Figure 9.19-2. Borough of Madison Hazard Area Extent and Location Map 2





Action Number:

MAD-1

Mitigation Action/Initiative:

Backup power (generator) for Madison High School (shelter).

Assessing the Risk	
Hazard(s) addressed:	All
Specific problem being mitigated:	Continuity of Operations for shelter
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Install generator in municipal shelter
	2. Do nothing
	3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	Install back-up generator for shelter
Action/Project Category	SIP
Goals/Objectives Met	G-3
Applies to existing and/or new development; or not applicable	Existing
Benefits (losses avoided)	High
Estimated Cost	High
Priority*	High
Plan for Implementation	
Responsible/Lead Agency/Department	OEM, Engineering
Local Planning Mechanism	EOP and Mitigation Plan
Potential Funding Sources	HMGP federal funds
Timeline for Completion	Short Term, DOF
Reporting on Progress (Do not complete – this will be used for the 2020 Update)	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)



Action Number: MAD-1

Mitigation Action/Initiative: Backup power (generator) for Madison High School (shelter).

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	1	
Environmental	0	
Social	1	
Administrative	1	
Multi-Hazard	1	
Timeline	1	
Local Champion	1	
Other Community Objectives	1	
Total	13	
Priority (High/Med/Low)	High	



Action Number:

MAD-2

Mitigation Action/Initiative:

Reconstruction of Elmer Street Culvert

Assessing the Risk	
Hazard(s) addressed:	Flood
Specific problem being mitigated:	Flooding or area
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Reconstruction of Elmer Street Culvert
	2. Do nothing – current problem continues
	3. No other feasible actions/projects were identified
Action/Project Intended for Implementation	
Description of Selected Action/Project	Reconstruction of Elmer Street Culvert
Action/Project Category	SIP
Goals/Objectives Met	G-3, G-4
Applies to existing and/or new development; or not applicable	N/A
Benefits (losses avoided)	High
Estimated Cost	High
Priority*	High
Plan for Implementation	
Responsible/Lead Agency/Department	DPW
Local Planning Mechanism	Stormwater Management
Potential Funding Sources	HMA Grants, NJDEP funding
Timeline for Completion	Short Term, DOF
Reporting on Progress (Do not complete – this will be used for the 2020 Update)	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)



Action Number:

MAD-2

Mitigation Action/Initiative:

Reconstruction of Elmer Street Culvert

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	1	
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	
Timeline	0	
Local Champion	1	
Other Community Objectives	1	
Total	12	
Priority (High/Med/Low)	High	



Action Number:

MAD-3

Mitigation Action/Initiative:

Improvement of Sewage Pump Station on North Street

Assessing the Risk	
Hazard(s) addressed:	Flood
Specific problem being mitigated:	Stormwater back-up overwhelms the sewage pump station located on North Street in the Borough
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Improvement of Sewage Pump Station on North Street
	2. Do nothing – current problem continues
	3. No other feasible actions/projects were identified
Action/Project Intended for Implementation	
Description of Selected Action/Project	Improvement of Sewage Pump Station on North Street. Storm water back-up overwhelms this pump station.
Action/Project Category	SIP
Goals/Objectives Met	G-3, G-4
Applies to existing and/or new development; or not applicable	Existing
Benefits (losses avoided)	High
Estimated Cost	High
Priority*	High
Plan for Implementation	
Responsible/Lead Agency/Department	DPW
Local Planning Mechanism	Stormwater Management, Capital Improvement
Potential Funding Sources	Municipal appropriations
Timeline for Completion	On-going
Reporting on Progress (Do not complete – this will be used for the 2020 Update)	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)



Action Number: MAD-3

Mitigation Action/Initiative: Improvement of Sewage Pump Station on North Street

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	1	
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	
Timeline	0	
Local Champion	1	
Other Community Objectives	1	
Total	12	
Priority (High/Med/Low)	High	



Action Number:

MAD-4

Mitigation Action/Initiative:

Stream Channel Stabilization at Johns Street

Assessing the Risk	
Hazard(s) addressed:	Flood
Specific problem being mitigated:	Flooding of area and erosion of stream channel
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Stream Channel Stabilization at Johns Street
	2. Do nothing – current problem continues
	3. No other feasible actions/projects were identified
Action/Project Intended for Implementation	
Description of Selected Action/Project	Stream channel stabilization
Action/Project Category	SIP
Goals/Objectives Met	G-3, G-4
Applies to existing and/or new development; or not applicable	N/A
Benefits (losses avoided)	High
Estimated Cost	High
Priority*	High
Plan for Implementation	
Responsible/Lead Agency/Department	DPW
Local Planning Mechanism	Stormwater Management, Capital Improvement
Potential Funding Sources	Municipal appropriations
Timeline for Completion	On-going
Reporting on Progress (Do not complete – this will be used for the 2020 Update)	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)



Action Number: MAD-4

Mitigation Action/Initiative: Stream Channel Stabilization at Johns Street

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	1	
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	
Timeline	0	
Local Champion	1	
Other Community Objectives	1	
Total	12	
Priority (High/Med/Low)	High	



Action Number:

MAD-5

Mitigation Action/Initiative:

Install Trash Rack at Library Swale

Assessing the Risk	
Hazard(s) addressed:	Flood
Specific problem being mitigated:	Flooding of area
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Install Trash Rack at Library Swale
	2. Do nothing – current problem continues
	3. No other feasible actions/projects were identified
Action/Project Intended for Implementation	
Description of Selected Action/Project	Install Trash Rack
Action/Project Category	SIP
Goals/Objectives Met	G-3, G-4
Applies to existing and/or new development; or not applicable	Existing
Benefits (losses avoided)	High
Estimated Cost	Medium
Priority*	Low
Plan for Implementation	
Responsible/Lead Agency/Department	DPW
Local Planning Mechanism	
Potential Funding Sources	Municipal appropriations
Timeline for Completion	On-going
Reporting on Progress (Do not complete – this will be used for the 2020 Update)	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)



Action Number:

MAD-5

Mitigation Action/Initiative:

Install Trash Rack at Library Swale

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	
Cost-Effectiveness	0	
Technical	1	
Political	0	
Legal	1	
Fiscal	0	
Environmental	1	
Social	0	
Administrative	1	
Multi-Hazard	0	
Timeline	0	
Local Champion	1	
Other Community Objectives	0	
Total	6	
Priority (High/Med/Low)	Low	



Action Number:

MAD-7

Mitigation Action/Initiative:

Culvert Replacement, Stream bed and bank re-stabilization

Assessing the Risk	
Hazard(s) addressed:	Flood
Specific problem being mitigated:	Flooding of area and erosion
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Culvert Replacement, Stream bed and bank re-stabilization
	2. Do nothing – current problem continues
	3. No other feasible actions/projects were identified
Action/Project Intended for Implementation	
Description of Selected Action/Project	Culvert Replacement, Stream bed and bank re-stabilization - Belleau Woods Culvert
Action/Project Category	SIP/NSP
Goals/Objectives Met	G-3, G-4
Applies to existing and/or new development; or not applicable	Existing
Benefits (losses avoided)	High
Estimated Cost	High
Priority*	High
Plan for Implementation	
Responsible/Lead Agency/Department	Engineer, OEM
Local Planning Mechanism	
Potential Funding Sources	HMA Grants
Timeline for Completion	Short Term, DOF
Reporting on Progress (Do not complete – this will be used for the 2020 Update)	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)



Action Number: MAD-7

Mitigation Action/Initiative: Culvert Replacement, Stream bed and bank re-stabilization

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	1	
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	
Timeline	0	
Local Champion	1	
Other Community Objectives	1	
Total	12	
Priority (High/Med/Low)	High	